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A Software Testbed for the Development of 3D Raster Graphics Systems

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- 1 [Ronald Baecker, Digital video display systems and dynamic graphics, ACM SIGGRAPH Computer Graphics, v.13 n.2, p.48-56, August 1979](#)
- 2 [James F. Blinn, Simulation of wrinkled surfaces, ACM SIGGRAPH Computer Graphics, v.12 n.3, p.286-292, August 1978](#)
- 3 [Alain Fournier , Don Fussell , Loren Carpenter, Computer rendering of stochastic models, Communications of the ACM, v.25 n.6, p.371-384, June 1982](#)
- 4 [Edwin Earl Catmull, A subdivision algorithm for computer display of curved surfaces., 1974](#)
- 5 [Edwin Catmull, A hidden-surface algorithm with anti-aliasing, ACM SIGGRAPH Computer Graphics, v.12 n.3, p.6-11, August 1978](#)
- 6 [James H. Clark, A fast scan-line algorithm for rendering parametric surfaces, Proceedings of the 6th annual conference on Computer graphics and interactive techniques, p.174, August 08-10, 1979, Chicago, Illinois, United States](#)
- 7 [CRow, F.C. Computer graphics in the entertainment industry. Computer 11, 3 \(Sep. 1977\), 11- 22.](#)
- 8 [C. Csuri , R. Hackathorn , R. Parent , W. Carlson , M. Howard, Towards an interactive high visual complexity animation system, ACM SIGGRAPH Computer Graphics, v.13 n.2, p.289-](#)

299, August 1979

- 9 GOURAUD, H. Continuous shading of curved surfaces. IEEE Trans. Comput. C-20, 6 (June 1971), 623-629.
- ◆ 10 J. H. Jackson, Dynamic scan-converted images with a frame buffer display device, ACM SIGGRAPH Computer Graphics, v.14 n.3, p.163-169, July 1980
- 11 LANE, J.M., AND CARPENTER, L.C. A generalized scan line algorithm for the computer display of parametrically defined surfaces. Computer Gr. Image Process. 11, 3, (1979), 290-297.
- ◆ 12 Jeffrey M. Lane , Loren C. Carpenter , Turner Whitted , James F. Blinn, Scan line methods for displaying parametrically defined surfaces, Communications of the ACM, v.23 n.1, p.23-34, Jan. 1980
- 13 MYERS, A.J. An efficient visible surface program. Report to National Science Foundation, Grant DCR74-00768 A01, Computer Graphics Research Group, Ohio State Univ., July 1975.
- ◆ 14 M. E. Newell , R. G. Newell , T. L. Sancha, A solution to the hidden surface problem, Proceedings of the ACM annual conference, August 01-01, 1972, Boston, Massachusetts, United States
- 15 Martin Edward Newell, The utilization of procedure models in digital image synthesis., 1975
- 16 William M. Newman , Robert F. Sproull, Principles of interactive computer graphics (2nd ed.), McGraw-Hill, Inc., New York, NY, 1979
- ◆ 17 Bui Tuong Phong, Illumination for computer generated pictures, Communications of the ACM, v.18 n.6, p.311-317, June 1975
- 18 RUBIN, S.M. The representation and display of scenes with a wide range of detail. Computer Gr. Image Process., in press.
- ◆ 19 Richard G. Shoup, Color table animation, ACM SIGGRAPH Computer Graphics, v.13 n.2, p.8-13, August 1979
- 20 Gary Scott Watkins, A real time visible surface algorithm, 1970
- 21 John Turner Whitted, A processor for display of computer generated images., 1978
- 22 WHITTED, T. Hardware enhanced 3D raster display systems. In Proceedings of Canadian Man- Computer Communication Conference, June 1981, pp. 349-356.
- ◆ 23 Lance Williams, Casting curved shadows on curved surfaces, ACM SIGGRAPH Computer Graphics, v.12 n.3, p.270-274, August 1978

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- ◆ Anselmo Lastra , Steven Molnar , Marc Olano , Yulan Wang, Real-time programmable shading, Proceedings of the 1995 symposium on Interactive 3D graphics, p.59-ff., April 09-12, 1995, Monterey, California, United States
- ◆ Gary Bishop , David M. Weimer, Fast Phong shading, ACM SIGGRAPH Computer Graphics, v.20 n.4, p.103-106, Aug. 1986
- ◆ C. H. Séquin , E. K. Smyrl, Parameterized Ray-tracing, ACM SIGGRAPH Computer Graphics, v.23 n.3, p.307-314, July 1989

- ◆ Gregory D. Abram , Turner Whitted, Building block shaders, ACM SIGGRAPH Computer Graphics, v.24 n.4, p.283-288, Aug. 1990
- ◆ John Rhoades , Greg Turk , Andrew Bell , Andrei State , Ulrich Neumann , Amitabh Varshney, Real-time procedural textures, Proceedings of the 1992 symposium on Interactive 3D graphics, p.95-100, June 1992, Cambridge, Massachusetts, United States
- ◆ William T. Reeves , Ricki Blau, Approximate and probabilistic algorithms for shading and rendering structured particle systems, ACM SIGGRAPH Computer Graphics, v.19 n.3, p.313-322, Jul. 1985
- ◆ Greg Abram , Lee Westover, Efficient alias-free rendering using bit-masks and look-up tables, ACM SIGGRAPH Computer Graphics, v.19 n.3, p.53-59, Jul. 1985
- ◆ Michael Potmesil , Eric M. Hoffert, FRAMES: Software tools for modeling, rendering and animation of 3D scenes, ACM SIGGRAPH Computer Graphics, v.21 n.4, p.85-94, July 1987
- ◆ Robert L. Cook, Shade trees, ACM SIGGRAPH Computer Graphics, v.18 n.3, p.223-231, July 1984
- ◆ Tom Nadas , Alain Fournier, GRAPE: An environment to build display processes, ACM SIGGRAPH Computer Graphics, v.21 n.4, p.75-84, July 1987
- ◆ Takafumi Saito , Tokiichiro Takahashi, Comprehensible rendering of 3-D shapes, ACM SIGGRAPH Computer Graphics, v.24 n.4, p.197-206, Aug. 1990
- ◆ T. Whitted , J. Kajiya, Fully procedural graphics, Proceedings of the ACM SIGGRAPH/EUROGRAPHICS conference on Graphics hardware, July 30-31, 2005, Los Angeles, California
- ◆ Pat Hanrahan , Jim Lawson, A language for shading and lighting calculations, ACM SIGGRAPH Computer Graphics, v.24 n.4, p.289-298, Aug. 1990
- ◆ William R. Mark , Leonard McMillan , Gary Bishop, Post-rendering 3D warping, Proceedings of the 1997 symposium on Interactive 3D graphics, p.7-ff., April 27-30, 1997, Providence, Rhode Island, United States
- ◆ Voicu Popescu , Paul Rosen, Forward rasterization, ACM Transactions on Graphics (TOG), v.25 n.2, p.375-411, April 2006

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Primary Classification:

I. Computing Methodologies

↳ I.3 COMPUTER GRAPHICS

↳ I.3.3 Picture/Image Generation

↳ **Subjects:** Display algorithms

Additional Classification:

I. Computing Methodologies

↳ I.3 COMPUTER GRAPHICS

↳ I.3.4 Graphics Utilities

↳ **Subjects:** Software support

↳ I.3.7 Three-Dimensional Graphics and Realism

↳ **Subjects:** Visible line/surface algorithms; Color, shading, shadowing, and texture

General Terms:

[Algorithms](#), [Design](#), [Experimentation](#), [Theory](#)

Keywords:

[software testbed](#)

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